ENCINA WASTEWATER AUTHORITY

A Public Agency

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February 12, 2001

U.S. Environmental Protection Agency
Region IX, Clean Water Act Compliance Office
75 Hawthorne Street
San Francisco, CA 94105-3901

Attention: Ms. Lauren Fondahl, Biosolids Coordinator

SUBJECT: 40 CFR Part 503 - 2000 Biosolids Annual Report

As required by the U.S. EPA Part 503 Regulation, attached please find the Encina Wastewater Authority's (EWA) Annual Biosolids (sewage sludge) Report. The report contains required record keeping information compiled from January through December 2000.

Background:

The EWA is a public agency responsible for administering and operating the Encina Water Pollution Control Facility located in Carlsbad, California. The EWA provides wastewater treatment services to approximately 280,000 North San Diego County residents.

The Encina plant is a full secondary activated sludge type facility with a design capacity of 36 MGD liquid and 38 MGD solids. The additional solids capacity is needed to accommodate satellite water reclamation facilities. The current plant flow is approximately 23 MGD.

The EWA produces approximately 26,203 wet tons of biosolids per year at 17%-19% solids. At the plant, the EWA achieves Class B Pathogen Reduction and Vector Attraction Reduction through anaerobic digestion. Due to an aggressive pretreatment program and a relatively low industrial flow (approximately 3%), the EWA continues to maintain high quality biosolids. In fact, the EWA's biosolids meet the Table 3 - Alternate Pollutant Limits for metals as established under the Part 503 Regulation.

In August of 2000 Synagro Technologies Inc. entered into a stock purchase agreement with Bio Gro, a Waste Management Company. The Company (Synagro Technologies Inc.) officially took over during the month of November 2000. For calendar year 2000, 100% of the EWA's biosolids were hauled by Waste Managements – RPI/Bio Gro division and Synagro Technologies Inc. to agricultural fields in Riverside and San Diego Counties in California where the biosolids are direct land applied according to the EPA Part 503 guidelines for Class

B biosolids. At this time, EWA does not have any standby contractors, as there are no other haulers or appliers in business.

Annual Report:

The enclosed annual report follows the format suggested by the California Association of Sanitation Agencies (CASA). This is the same format as submitted the past seven years. The format was developed as a result of discussions between CASA representatives and U.S. EPA - Region IX staff.

The report contains the following: a general information section about the EWA; biosolids quantities; pollutant concentration analyses; a description of how the pathogen reduction/vector attraction requirements are met; and a section pertaining to certification statements. In addition, back-up pollutant concentration data, RPI/Bio Gro/Synagro Technologies Inc. certifications, pathogen reduction/vector attraction reduction data, and EWA certification statements have been included as attachments. Although required to test on a bi-monthly basis (every 60 days), the EWA has included monthly test results for the ten "Table 3" pollutants (Section 503.13).

If you have any questions or would like additional information, please contact Jeff Parks, the EWA's Laboratory Supervisor, at (760) 438-3941 ext. 3600.

Very truly yours,

Michael T. Hogan
General Manager

Enclosure

pc: Mr. Mark Grey, Synagro Technologies, Inc.
Mr. Todd Stanley, San Diego RWQCB
EPA Part 503 Regulation Annual Report File

JSP:MTH:jp

ENCINA WATER POLLUTION CONTROL FACILITY
NPDES NUMBER CA0107395

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Jeff Parks
Laboratory Supervisor

ENCINA WASTEWATER AUTHORITY

U.S. EPA PART 503 SEWAGE SLUDGE REGULATION

BIOSOLIDS ANNUAL REPORT FOR 2000

February 12, 2001

I. GENERAL

1. Generator Name:

Encina Wastewater Authority
6200 Avenida Encinas
Carlsbad, CA 92009

2. Contact Person:

Mr. Jeff Parks, Laboratory Supervisor
Mr. Bruce Dale, Operations Asst. Superintendent

3. Telephone:

(760) 438-3941 ext. 3600, 3105
(760) 438-3861 - Fax

4. Average Flow:

Approximately 22.4 MGD

5. Sludge (Biosolids) Treatment Process:

The Encina Wastewater Authority (EWA) uses a contractor to manage the biosolids generated from the treatment process. From January 2000 through October 2000 RPI/Bio Gro managed 100% of Encina's biosolids. In August of 2000 Synagro Technologies, Inc entered into a stock purchase agreement resulting in the buy-out of RPI/Bio Gro. Hence, Synagro Technologies now manages 100% of the biosolids generated by the Encina Wastewater Authority. Synagro, Technologies, Inc. hauls the material to agricultural fields in Riverside and San Diego Counties where they are direct land applied according to the EPA's protocol for Class B biosolids.

At the wastewater treatment plant, the EWA meets the Class B Pathogen Reduction requirements and the Vector Attraction Reduction requirements through anaerobic digestion.

The EWA maintains three anaerobic digesters with a capacity of approximately two million gallons each. Currently, only two digesters are utilized with the third available as a backup.

A mix of primary sludge and thickened secondary waste activated sludges are fed to the digesters where the Class B and Vector Reduction requirements are met. Following digestion, the biosolids are dewatered to approximately 17%-19% total solids using belt filter presses and loaded into covered water tight trailers for hauling.

II. LAND APPLIED BIOSOLIDS

1. Volume:

From January to December 2000, a total of **23,845 wet metric tons or 4,390 dry metric tons** (26,203 wet and 4,824 dry U.S. tons respectively) of Class B biosolids were hauled by RPI/Bio Gro and Synagro Technologies, Inc. to agricultural fields in Riverside and San Diego Counties for direct land application A monthly breakdown of the biosolids quantities can be found in Attachment A.

2. Pollutants:

Attachment B shows a table of the test results for the 9 pollutants identified under Subpart B - Section 503.13 for 2000. Although required to test every other month, the EWA conducts monthly metals testing. All tests are conducted by the EWA's certified laboratory. A description of the EWA's testing procedures can also be found in Attachment B.

Nitrogen Analyses:

Subpart B also requires that Class B biosolids that are land applied be analyzed for nitrogen content. Under the EWA's contract with RPI/Bio Gro now Synagro Technologies, Inc., they have agreed to perform the nitrogen analysis. RPI/Bio Gro supplies the nitrogen analyses to the EWA on a monthly basis. The monthly nitrogen data is included with the pollutant concentration data in Attachment B. For the 2001 reporting period Encina will send out monthly biosolids samples for Nitrogen (TKN) analyses.

3. Pathogens:

The EWA meets the Class B Pathogen Reduction and Vector Attraction Reduction requirements at the plant through anaerobic digestion (methods 503.32(b)(3) and 503.33(b)(1) respectively). A description of the EWA's Class B and Vector Attraction Reduction procedures, as well as digester data can be found in Attachment C.

4. EWA Certification Statements:

As per Section 503.16 - Table 5, the EWA is required to monitor its biosolids every two months. Attachment D contains copies of the all EWA certification statements from January through December 1999.

Since RPI/Bio Gro and Synagro land applied 100% of the Class B biosolids from the EWA during 2000, they are responsible for certifying that the management practices in Section 503.14 and the site restrictions in 503.32(b)(5) were followed. The EWA monitors these practices through quarterly site inspections at the various land application sites. RPI/Bio Gro's and Synagro's certifications for the January through December 2000 reporting period can also be found in Attachment E.

ATTACHMENT A

ENCINA WASTEWATER AUTHORITY
U.S. EPA PART 503 REGULATION
CALCULATIONS FOR BI-MONTHLY MONITORING
2000

RPI/ BIO GRO

Month/Yr.	U.S. Wet Tons	U.S. Dry Tons	Metric Wet Tons	Metric Dry Tons
Jan. 2000	1,976	377	1,798	343
Feb. 2000	1,919	359	1,746	327
Subtotal	**3,895**	**736**	**3,544**	**670**
Mar. 2000	2,546	474	2,317	431
Apr. 2000	2,306	404	2,098	368
Subtotal	**4,852**	**878**	**4,415**	**799**
May 2000	2,120	384	1,929	349
Jun. 2000	2,237	414	2,036	377
Subtotal	**4,357**	**798**	**3,965**	**726**
Jul. 2000	2,089	381	1,901	347
Aug. 2000	2,179	404	1,983	368
Subtotal	**4,268**	**785**	**3,884**	**715**
Sep. 2000	2,178	403	1,982	367
Oct. 2000	2,195	413	1,997	376
Subtotal	**4,373**	**816**	**3,979**	**742**
Nov. 2000	2,168	402	1,973	366
Dec. 2000	2,290	409	2,084	373
Subtotal	**4,458**	**812**	**4,057**	**739**
Annual Totals	**26,203**	**4,824**	**23,845**	**4,390**

ATTACHMENT B

ENCINA WASTEWATER AUTHORITY

MEMORANDUM

February 9, 2000

TO: Files

FROM: Jeff Parks, Laboratory Supervisor JP

Subject: Methodology for Determining the EPA Part 503 Alternative Pollutant Limits for Metals

The purpose of this memo is to describe the Encina Wastewater Authority's methodology for testing its biosolids for the EPA Table 3 Alternative Pollutant Limits. All testing is done in accordance with the procedures prescribed in the EPA Part 503 Sewage Sludge Regulation.

Encina currently tests the biosolids on a monthly basis. Biosolids samples are taken from the conveyer belts which are downstream from the dewatering belt filter presses. The samples are taken just prior to loading into the trailers. Prior to dewatering, the biosolids spend approximately 30 to 45 days in the anaerobic digesters where the Class B Pathogen Reduction and the Vector Attraction Reduction requirements are met.

The biosolids samples tested are a composite of six grab samples taken intermittently over a two day period. Sampling usually occurs early in any given month. In addition to testing for the 10 APL metals, the biosolids are tested for total solids. All metals are digested and tested for on a wet weight basis.

The following is a summary of the testing methodologies used to test for each of the 10 APL metals.

Metal	EPA Analysis Method	Digestion Method
1. Arsenic	7060 (GFAA)	Method 3050
2. Cadmium	7130 (FAA)	Method 3050
3. Chromium	7190 (FAA)	Method 3050
4. Copper	7210 (FAA)	Method 3050
5. Lead	7420 (FAA)	Method 3050
6. Mercury	7471 (MCVT)	Method 3050
7. Molybdenum	7481 (FAA)	Method 3050
8. Nickel	7520 (FAA)	Method 3050
9. Selenium	7740 (GFAA)	Method 3050
10. Zinc	7950 (FAA)	Method 3050

Note:		
	GFAA =	Graphite Furnace Atomic Absorption
	FAA =	Flame Atomic Absorption
	ICP =	Inductively Coupled Plasma
	MCVT =	Manual Cold Vapor Technique
	3050 =	Digestion through Nitric Acid and Hydrogen Peroxide Solution

ENCINA WASTEWATER AUTHORITY
U.S. EPA PART 503 REGULATION
APL METALS MONITORING
2000

Month/Yr.	Arsenic	Cadmium	Copper	Lead	Mercury	Molybdenum.	Nickel	Selenium	Zinc	Nitrogen (TKN)
Jan. 2000	16.62	3.99	407.27	32.20	1.82	18.09	25.45	1.47	1015	6.12
Feb. 2000	16.37	3.08	419.69	30.54	1.32	14.67	26.25	<0.01	1163	6.32
Mar. 2000	7.38	5.67	402.00	26.67	2.00	20.62	30.07	2.50	1100	6.43
Apr. 2000	5.62	4.35	422.12	22.77	0.81	19.55	30.48	0.32	1165	6.28
May 2000	15.94	5.60	440.77	35.49	1.05	17.65	24.59	1.18	1246	6.56
Jun. 2000	13.71	5.73	471.50	34.10	0.45	15.74	23.40	0.28	1434	6.35
Jul. 2000	14.70	7.20	520.18	32.26	0.63	16.09	21.6	0.92	1480	6.35
Aug. 2000	16.10	6.68	589.61	31.23	0.96	29.80	22.65	0.23	1585	6.44
Sep. 2000	18.28	9.76	586.53	30.47	1.25	16.42	47.92	<0.01	1646	5.44
Oct. 2000	18.17	6.57	617.32	24.63	1.49	16.12	40.16	<0.01	1574	6.20
Nov. 2000	18.74	10.41	553.68	54.45	0.54	12.56	41.65	1.16	1333	6.20
Dec. 2000	16.85	9.38	559.35	46.24	1.32	12.54	34.75	0.40	1115	n/a
Average	**14.87**	**6.54**	**499**	**33.42**	**1.14**	**17.49**	**30.75**	**0.70**	**1,321**	**5.69**

Note: All results are in Mg/Kg dry weight
All tests, except nitrogen, done by Encina's Lab
ND = Non Detect at 0.01 dry weight detection limit
Nitrogen testing conducted by RPI/Bio Gro/ Synagro Technologies (contract lab A&L Western Agricultural Laboratories).
Values are %(TKN)Nitrogen
n/a = value not available, sampling date is questionable

ATTACHMENT C

ENCINA WASTEWATER AUTHORITY

MEMORANDUM

February 9, 2000

TO: Files

FROM: Jeff Parks, Laboratory Supervisor JP

SUBJECT: Methodology for Meeting the EPA Part 503 Regulation's Class B Pathogen Reduction and Vector Attraction Reduction Requirements

The EWA currently meets the Part 503 Pathogen Reduction and Vector Attraction Reduction Requirements through anaerobic digestion. Under the Part 503 Regulation, sludge must be anaerobically digested for a period of at least 15 days, at a temperature between 35 to 55 degrees Celsius, and achieve a volatile solids reduction of at least 38% to adhere the requirements set forth.

Encina has three anaerobic digesters. digester 4, 5,and 6, each with a capacity of 2,050,000 gallons. Currently, digesters 5 and 6 are operational with digester 4 available as a backup. Mixed primary and Thickened Waste Activated Sludge (T.W.A.S) are fed into the digesters at equal flows ensuring that minimum detention times, according to 503 regulations are achieved.

The digesters are maintained at temperatures between 35 and 37 degrees Celsius (95-98 degrees Fahrenheit) to ensure adequate stabilization. The digester temperature is monitored continuously and recorded three times daily. Weekly samples are taken from the primary and TWAS tanks and are analyzed for total and volatile solids. In addition, weekly samples are taken from the anaerobically digested sludge (primary/TWAS mix) and are analyzed for total solids, volatile solids, pH, alkalinity and volatile acids. The solids results for each are compared to determine the volatile solids reduction. The following formula is used:

$$\% \text{ VS Reduction} = \frac{(\%\text{VS In} - \%\text{VS Out})}{\%\text{ VS In} - \frac{(\%\text{VS In})(\%\text{ VS Out})}{100}} * 100$$

The weekly results are combined to calculate a monthly volatile solids reduction average.

ENCINA WASTEWATER AUTHORITY
U.S. EPA PART 503 REGULATION
PATHOGEN/VECTOR ATTRACTION REDUCTION DATA
2000

	Digester 5				Digester 6				
Month/Yr.	Average %VS Red	Average Temp (F)	Average Temp (C)	Average Det Time (Days)	Month/Yr.	Average %VS Red	Average Temp (F)	Average Temp (C)	Average Det Time (Days)
Jan. 2000	59.99	98.11	36.73	28.82	Jan. 2000	59.99	98.03	36.68	29.39
Feb. 2000	52.77	98.23	36.80	31.58	Feb. 2000	52.77	98.02	36.68	31.27
Mar. 2000	61.46	98.21	36.78	25.33	Mar. 2000	61.46	98.16	36.75	26.06
Apr. 2000	57.84	98.38	36.88	28.06	Apr. 2000	57.84	98.03	36.68	27.11
May 2000	61.46	98.21	36.78	25.33	May 2000	61.46	98.16	36.75	26.06
Jun. 2000	59.27	98.15	36.75	28.04	Jun. 2000	59.27	97.99	36.66	28.54
Jul. 2000	59.89	98.05	36.70	28.42	Jul. 2000	59.89	98.00	36.67	29.86
Aug. 2000	55.70	98.17	36.76	29.45	Aug. 2000	55.70	97.75	36.53	29.86
Sep. 2000	57.66	98.39	36.88	29.69	Sep. 2000	57.66	97.85	36.58	29.92
Oct. 2000	55.64	98.48	36.93	30.78	Oct. 2000	55.64	97.85	36.59	30.10
Nov. 2000	58.26	98.61	37.01	29.74	Nov. 2000	58.26	97.93	36.63	31.02
Dec. 2000	59.49	98.50	36.94	29.89	Dec. 2000	59.49	97.64	36.47	30.34
Month Ave.	**58.29**	**98.29**	**36.83**	**28.76**	**Month Ave.**	**58.29**	**97.95**	**36.64**	**29.13**